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# Methods changes during the COVID-19 period

A series of notes describing key changes in the methods used to produce and disseminate ABS economic statistics during the COVID-19 period

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## Main features

### Methods changes during the COVID-19 period

The COVID-19 period provided us with unprecedented times, which meant that the Australian Bureau of Statistics (ABS), like other National Statistical Organisations, had to review and where necessary make changes to methods to ensure the quality of ABS statistics during this period.

From March 2020, the Australian Bureau of Statistics (ABS) responded rapidly to meet Australia's data needs and strategic priorities during the COVID-19 pandemic. This required

the ABS to review existing methods and frameworks, develop new methods, pursue new public and private sector data sources, produce new insights and engage more frequently with international organisations. In addition to this some periodic surveys had to be delayed (e.g. six yearly Household Expenditure Survey) as atypical data would have been collected.

By the start of 2022:

- Achieving survey responses to key economic surveys remained challenging because of COVID-19, as businesses reduced staffing capacity and/or worked from home and reliance on face-to-face household data collection was impacted by COVID-19 public health orders. The ongoing cooperation of businesses and households who responded to ABS surveys during this difficult period was greatly appreciated.
- With the co-operation of public and private sector data providers, the ABS gained access to new de-identified data sources such as Single Touch Payroll, and bank transaction data, which we used in core economic statistics (e.g. National Accounts) as well as developing new insights (e.g. [monthly turnover](https://www.abs.gov.au/methodologies/monthly-business-turnover-indicator-methodology/aug-2021) (<https://www.abs.gov.au/methodologies/monthly-business-turnover-indicator-methodology/aug-2021>) and [household spending indicators](https://www.abs.gov.au/articles/using-bank-transactions-data-measure-household-spending) (<https://www.abs.gov.au/articles/using-bank-transactions-data-measure-household-spending>)).
- Trend series continued to be suspended. The reinstatement of trend series will continue to be reviewed on a case-by-case basis, considering the stability of the trend series.
- Many data series continued to use forward factors for seasonal adjustment, with additional seasonal analysis being undertaken to monitor when concurrent seasonal adjustment could be reinstated.
- As in the 2021 CPI annual reweighting, the 2022 CPI annual reweighting (published in December 2021 (<https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/annual-weight-update-cpi-and-living-cost-indexes/latest-release>)) made use of additional data sources.

Further information on changes can be found on this page.

This page will be updated with key changes in the methods used to produce and disseminate ABS economic statistics during the COVID-19 period.

## **ABS trend and seasonal adjustment during COVID-19**

### **Suspension of trend estimates during the COVID-19 period**

The rationale for suspending trend estimates during the COVID-19 period was that the trend estimate includes the medium to long direction of a time series, in contrast to the seasonal

component (systematic and calendar related movements) and the irregular component (unsystematic and short term fluctuations).

To estimate the trend, significant events are assigned to either the trend, seasonal or irregular components of a time series. If the impact is assigned to the trend then it will be visible in the trend, if not, then it will not. At the start of the COVID-19 pandemic it was not known whether the impacts of COVID-19 would be short or medium to long-term and therefore we could not confidently assign it to the trend or not. This meant that the interpretation of trend estimate during the period affected by COVID-19 could be misleading. Therefore, during the COVID-19 period the ABS suspended the publication of trend estimates until the medium to long-term nature of the impact was understood. Reinstatement of trend will be done on a case-by-case basis considering the stability of the trend series.

During the global financial crisis in 2009, the ABS suspended trend estimation for retail trade estimates. On that occasion it was based upon the disturbance to spending created by aspects of the policy response, most notably cash payments to households. The impacts of COVID-19 were more extensive, so the ABS suspended the release of trend estimates across its statistics.

For short term growth rates, the seasonally adjusted series still provides utility for understanding underlying movements and so will continue to be published where appropriate.

### **Reinstatement of Trend by release**

| Publication  | Planned/achieved reinstatement of Trend              | Reference period           | Publication date |
|--|--|----------------------------|------------------|
| Australian National Accounts: National Income, Expenditure and Product (quarterly) | TBC  | TBC                        |                  |
| Average Weekly Earnings, Australia   | November 2022 issue                                  | 23rd February 2023         |                  |
| Balance of Payments and International Investment Position, Australia               | March 2023 issue (with exceptions for select series) | 6th June 2023              |                  |
| Building Activity, Australia   | September 2022 issue                                 | 18th January 2023          |                  |
| Building Approvals, Australia  | May 2022 issue                                       | 4th July 2022              |                  |
| Business Indicators, Australia   | TBC  | TBC                        |                  |
| Construction Work Done, Australia, Preliminary                                     | September 2022 issue                                 | 30th November 2022         |                  |
| Engineering Construction Activity, Australia                                       | September 2022 issue                                 | 11th January 2023          |                  |
| International Trade in Goods and Services, Australia                               | March 2023 issue (with exceptions for select series) | 4th May 2023               |                  |
| Job Vacancies, Australia   | May 2023 issue                                       | 29th June 2023             |                  |
| Labour Account Australia   | TBC, expected June or September quarter 2023         | TBC                        |                  |
| Labour Force, Australia, Monthly   | September 2022 issue                                 | 20th October 2022          |                  |
| Labour Force, Australia, Detailed  | September 2022 issue                                 | 27th October 2022          |                  |
| Labour Force, Australia, Quarterly   | November 2022 issue                                  | 22nd December 2022         |                  |
| Lending Indicators   | October 2022 issue                                   | 1st December 2022          |                  |
| Livestock Products, Australia  | TBC  | TBC                        |                  |
| Mineral and Petroleum Exploration, Australia                                       | September 2022 issue                                 | 5th December 2022          |                  |
| Monthly Business Turnover Indicator  | September 2023 issue, for 12 Divisions               | 9th November 2023          |                  |
| Overseas Arrivals and Departures, Australia  | Expected: August 2023 issue                          | Expected: mid-October 2023 |                  |
| Private New Capital Expenditure and Expected Expenditure, Australia                | September 2022 issue                                 | 1st December 2022          |                  |
| Retail Trade, Australia  | June 2023 issue                                      | 28 July 2023               |                  |
| Wage Price Index, Australia  | June 2022 issue                                      | 17th August 2022           |                  |

## Seasonal adjustment during the COVID-19 period

In 2020, the ABS considered 'how to seasonally adjust during an extended period of large (or potentially large) unusual impacts to a time series from COVID-19'? The key being to maintain data quality and minimise revisions.

Three options were considered:

1. Move to forward factors for all seasonally adjusted estimates.
2. Move to forward factors for series that show, or are anticipated to show, a significant and prolonged impact during the COVID-19 period in the context of the usual volatility of the series.
3. Retention of concurrent seasonal adjustment with interventions where necessary for all seasonally adjusted estimates.

Forward factor seasonal adjustment uses data up to a fixed point in time to estimate seasonal factors. These factors are then used as the seasonal factors for the next twelve months or four quarters. This process is repeated annually to calculate seasonal factors for the coming year. Seasonal factors for previous years are also revised at this point. Large unusual impacts to the times series, such as COVID-19, do not require real-time interventions to the seasonal factors but will require intervention at the end of the twelve

month period.

This method was used by the ABS prior to the early 2000s.

Concurrent seasonal adjustment uses data from a defined period in the time series to calculate the seasonal factors. Each time a new data point is added to the time series, the seasonal factors are recalculated through the series. Where time series are not impacted by large unusual events, this allows seasonal factors to account for changing seasonality in a more timely way.

Seasonal factors are revised with each new data point. The concurrent seasonal factors are more dynamic to changes, resulting in more frequent but generally lower revisions than if using forward factors.

When there are large unusual impacts to the time series, such as COVID-19, interventions are required (e.g. outliering) to prevent distortion of the seasonal factors.

This is the standard method is used by ABS.

This [information paper \(<https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/8514.01999?OpenDocument>\)](https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/8514.01999?OpenDocument) provides further information on forward factors and concurrent seasonal adjustment.

There is no perfect answer to 'how to seasonally adjust during a period of large (or potentially large) unusual impacts to a time series during COVID-19'? The ABS therefore decided that:

- Where a time series will be exposed (or anticipated to be exposed) to a significant and prolonged impact from COVID-19, fixed forward factors will be adopted. This is to avoid the need to assess and review, on a period-by-period basis successive interventions which may be required.
- If a time series is not severely impacted (or anticipated to be impacted) by COVID-19 for a significant and prolonged period, concurrent seasonal adjustment should continue, with interventions as necessary.
- Time series will be assessed on a case-by-case basis, using analytical tools in X-12-ARIMA.
- Additional analysis will be undertaken annually to decide whether series on forward factors can revert to concurrent seasonal adjustment, or need to stay on forward factors (with updated factors for the next twelve months). Series remaining on forward factors will be reviewed again after twelve months or before if the series appears to have stabilised.

**The table below lists the ABS series that have moved to forward factors for seasonal adjustment.**

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[Show all](#)

| Output   | Series moved to Forward Factors  | Reference period that the series moved to forward factors | Series moved back to concurrent  |
|--|--|---|--|
|  |  |   | 3 series back to concurrent from March 2021:   |
| 5368.0 International Trade in Goods and Services | Transport services, Passenger - Exports (credits)<br>Travel services, Exports (credits)<br>Transport services, Passenger - Imports (debits)<br>Travel services - Imports (debits). | March 2020  | Transport services, Other - Exports (credits)<br>Other Services - Exports (credits)<br>Other Services - Imports (debits) |
|  |  |   | 4 series back to concurrent from March 2023:   |
|  |  |   | Travel services (credits)  |
|  |  |   | Travel services (debits)   |
|  |  |   | Transport passenger (credits)  |
|  |  |   | Transport passenger (debits)   |
| 5601.0 Lending Indicators All published series   |  | April 2020  |  |
| 6401.0 Consumer Price Index                      | Child care<br>Medical and hospital services<br>Preschool and primary education   | June quarter 2020   | 3 series back to concurrent from June 2021:<br>Childcare EC<br>Medical and hospital EC<br>Primary education EC           |
| 6202.0 Labour Force                              | All  | April 2020  |  |
| 6354.0 Job Vacancies                             | 2 (Australia and Public sector, with Private sector remaining concurrent)  | May 2020  | All series revert back to concurrent from May 2023   |
| 6302.0 Average Weekly Earnings                   | 78 (21 will remain as concurrent)  | May 2020  | All seasonally adjusted series reverted back to concurrent from November 2022  |
| 5206.0 National Accounts GFCE                    |  | March quarter 2020  |  |
|  | · Sales of goods and services: National, NSW, ACT, VIC, QLD, NT, SA, WA, TAS   |   |  |
|  | · Use of goods and services: National, NSW, ACT, VIC, QLD, NT, SA, WA, TAS   |   |  |
|  | · Employee Expenses: NSW, ACT, VIC, QLD, NT, SA, WA, TAS   |   |  |
|  | · Commonwealth non defence - Use of goods and services: National, NSW, ACT, VIC, QLD, NT, SA, WA, TAS  |   |  |
|  | · Use of goods and services + employee expenses - sales of goods and services: National, NSW, ACT, VIC, QLD, NT, SA, WA, TAS   |   |  |
|  | HFCE   |   |  |
|  | · Purchase of Vehicles: ACT  |   |  |
|  | · Hotels, Cafes and Restaurants  |   |  |
|  | · Clothing and Footwear  |   |  |
|  | · Food   |   |  |
|  | · NEO  |   |  |
|  | · NEO Credits  |   |  |
|  | · NEO Debits   |   |  |
|  | · Transport Services   |   |  |
|  | · Operation of Vehicles  |   |  |

| Output | Series moved to Forward<br>Factors                      | Reference period<br>that the series<br>moved to<br>forward factors | Series moved<br>back to<br>concurrent |
|--------|---|--|---------------------------------------|
|        |   |  |                                       |
|        |   |  |                                       |
|        | TRADE   |  |                                       |
|        | · Travel Services Imports                               |  |                                       |
|        | · Travel Services Exports                               |  |                                       |
|        | · Transport Services Imports                            |  |                                       |
|        | · Transport Services Export                             |  |                                       |
|        | INCOME  |  |                                       |
|        | · Arts and Recreation COE                               |  |                                       |
|        | · Accommodation and food services COE                   |  |                                       |
|        | · Accommodation and food services GOSM                  |  |                                       |
|        | PRODUCTION  |  |                                       |
|        | QBIS Sales  |  |                                       |
|        | · Mining - Exploration and Mining Support Services      |  |                                       |
|        | · Manufacturing - Food Product                          |  |                                       |
|        | · Beverage and Tobacco Products                         |  |                                       |
|        | · Wood Product Manufacturing                            |  |                                       |
|        | · Pulp, Paper and Converted Paper Product               |  |                                       |
|        | · Printing & Recorded Media                             |  |                                       |
|        | · Basic Chemical & Chemical Product                     |  |                                       |
|        | · Polymer Product and Rubber Product                    |  |                                       |
|        | · Primary Metal & Metal Products                        |  |                                       |
|        | · Fabricated Metal Product Manufacturing                |  |                                       |
|        | · Transport Equipment Manufacturing                     |  |                                       |
|        | · Machinery & Equipment                                 |  |                                       |
|        | · Electricity, Gas, Water and Waste Services - Gas      |  |                                       |
|        | · Waste Collect, Treatment & Disposal                   |  |                                       |
|        | · Wholesale trade - Basic Material Wholesaling          |  |                                       |
|        | · Machinery & Equipment Wholesaling                     |  |                                       |
|        | · Motor Vehicle & Motor Vehicle Parts Wholesaling       |  |                                       |
|        | · Grocery, Liquor & Tobacco Product Wholesaling         |  |                                       |
|        | · Other Goods Wholesaling                               |  |                                       |
|        | · Commission-Based Wholesaling                          |  |                                       |
|        | Retail Trade Survey                                     |  |                                       |
|        | · Supermarket and Grocery Stores                        |  |                                       |
|        | · Specialised Food Retailing                            |  |                                       |
|        | · Liquor Retailing                                      |  |                                       |
|        | · Furniture, Floor Coverings, Houseware and Textile     |  |                                       |
|        | Goods Retailing   |  |                                       |
|        | · Electrical and Electronic Goods Retailing             |  |                                       |
|        | · Hardware, Building and Garden Supplies Retailing      |  |                                       |
|        | · Newspaper and Book Retailing                          |  |                                       |
|        | · Recreational Goods Retailing                          |  |                                       |
|        | · Clothing Retailing                                    |  |                                       |
|        | · Clothing, Footwear and Personal Accessory Retailing   |  |                                       |
|        | · Department Stores                                     |  |                                       |
|        | · Pharmaceutical, Cosmetic and Toiletry Goods Retailing |  |                                       |
|        | · Other Retailing Retail Trade Survey                   |  |                                       |
|        | QBIS Sales  |  |                                       |
|        | · Accommodation and Food Services - Accommodation       |  |                                       |
|        | · Food & Beverage Services                              |  |                                       |
|        | · Transport, Postal and Warehousing - Road Transport    |  |                                       |
|        | · Rail Transport  |  |                                       |
|        | · Water Transport                                       |  |                                       |
|        | · Other Transport                                       |  |                                       |

| Output   | Series moved to Forward Factors  | Reference period that the series moved to forward factors | Series moved back to concurrent |
|--|--|---|---------------------------------|
|  | <ul style="list-style-type: none"> <li>· Postal, Courier &amp; Other Services</li> <li>· Transport Support Services</li> <li>· Warehousing &amp; Storage Services</li> <li>· Information Media and Telecommunications - Publishing (ex Internet &amp; Music Publishing)</li> <li>· Motion Picture &amp; Sound Recording Activities</li> <li>· Broadcasting (Except Internet)</li> <li>· Internet Publishing &amp; Broadcasting &amp; ISP</li> <li>· Telecommunication Services</li> <li>· ISPs, Web Search Portals &amp; Data Process Services</li> <li>· Library &amp; Other Information Services</li> <li>· Financial and Insurance Services - Auxiliary Finance and Insurance Services</li> <li>· Rental, Hiring and Real Estate Services - Rental and Hiring Services</li> <li>· Property Operators and Real Estate Services</li> <li>· Professional, Scientific and Technical Services - Other Professional, Scientific and Technical Services</li> <li>· Administrative and Support Services - Administrative Services</li> <li>· Building Cleaning, Pest Control and Other Support Services</li> <li>· Arts and Recreation Services - Heritage Activities</li> <li>· Creative &amp; Performing Arts Activities</li> <li>· Sports and Recreation Activities</li> <li>· Gambling Activities</li> <li>· Other Services - Repair &amp; Maintenance</li> <li>· Personal &amp; Other Services</li> </ul> <p>QBIS Inventories</p> <ul style="list-style-type: none"> <li>· DIV H, SD44 - Accommodation</li> <li>· DIV H, SD45 - Food and Beverage Services</li> <li>· Cafes, Restaurants and Takeaway Food Services</li> <li>· Cafes and Restaurants</li> <li>· Takeaway Food Services</li> <li>· Catering Services</li> <li>· Pubs, Taverns and Bars</li> <li>· Clubs (Hospitality)</li> <li>· Mining</li> <li>· DIV B, SD 06 - Coal Mining</li> <li>· DIV B, SD 07 - Oil and Gas Extraction</li> <li>· DIV B, SD 08 - Metal Ore Mining</li> <li>· DIV B, SD 09 -Non-Metallic Mineral Mining and Quarrying</li> <li>· DIV B, SD10 Exploration and Other Mining Support Services</li> <li>· DIV D, SD 26 -Electricity Supply</li> <li>· DIV D, SD 27 - Gas Supply</li> </ul> |   |                                 |
| 8501.0 Retail Trade Australia  | All series were moved to forward factors consistent with initial advice from MD.   | March 2020  |                                 |
| 5625.0 - Private New Capital Expenditure and Expected Expenditure, Australia, Mar 2020 | In consultation with BAC/ECS and National Accts Capital Teams, all series are on concurrent seasonal adjustment to maintain consistency across related series.   | June quarter 2020   |                                 |
| 8412.0 - Mineral and   | Expectation that most series will move across to forward factors for June quarter but will be in   |   |                                 |

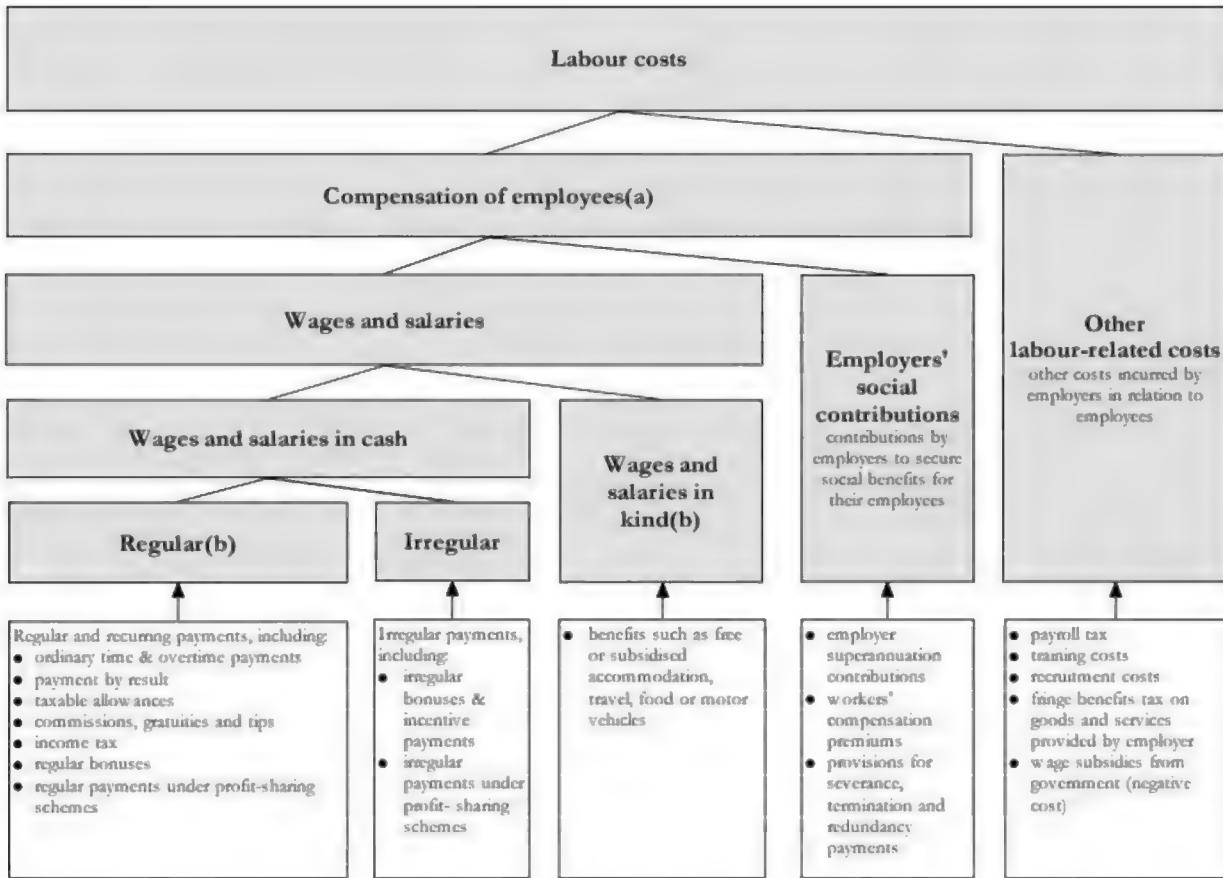
| <b>Output</b>                                  | <b>Series moved to Forward Factors</b>  | <b>Reference period that the series moved to forward factors</b> | <b>Series moved back to concurrent</b>   |
|--|---|--|--|
| Petroleum Exploration, Australia               | consultation with BAC/ECS and National Accts Capital Team.  |  |  |
| 5676.0 - Business Indicators, Australia (QBIS) | Most series moved to forward factors in line with advice from MD then in consultation with National Accounts Production/Income team select series were reverted back to concurrent to maintain consistency between QBIS and the Accounts for key series.<br><br>Around 360 series are on forward factors. | March/June quarter 2020  |  |
|  | Expectation that further series will move across to forward factors for June quarter but will be in consultation with National Accounts.  |  |  |
| 8731 - Building Approvals Australia            | All monthly series moved to forward factors from the May month in line with advice from MD and notification of NAB (trend also suspended).  | May 2020   |  |
| 6150.0.55.003 Labour Account                   | Quarterly CVM series remain as trend/concurrent adjustment to March quarter. Will suppress for June quarter release in the coming month.  |  |  |
| 8755.0 Construction Work                       | All published labour account series have moved to Forward Factors from June quarter 2020 release.   | June quarter 2020  |  |
| Done   |   |  |  |
| 8752.0 Building Activity                       | Trend suspended and maintained concurrent adjustment in line with advice from Methodology Division.   | June quarter 2020  |  |
| 8762.0 Engineering Construction                |   |  |  |
| 6345.0 Wage Price Index                        | Private and All sector indexes  | June quarter 2020  | Private and All sector indexes moved back to concurrent in June quarter 2022<br><br>Six series moved back to concurrent in August 2022:  |
|  |   |  | Construction<br>Wholesale trade<br>Retail trade<br>Information media and telecommunications<br>Professional, scientific and technical services<br>Administrative and support services                              |
| 5681.0 Monthly Business Turnover Indicator     | All industry divisions except Mining  | August 2021 (first release)                                      | A further five series were moved back to concurrent in August 2023:<br><br>Manufacturing<br>Accommodation and food services<br>Transport, postal and warehousing<br>Arts and recreation services<br>Other services |

## Treatment of JobKeeper in Labour and Wage related ABS statistics

The table below summarises the conceptual treatment of JobKeeper in ABS labour and wages related statistics and any changes to the questionnaire or series published.

| Collection   | Conceptual treatment of JobKeeper   | Questionnaire changes necessitated by JobKeeper   | Additional analysis or series that will be published   |
|--|---|---|--|
| Labour Force (and annual surveys collected with the Labour Force Survey) | JobKeeper-supported jobs and earnings are included in employment and earnings series.   | No changes.   |  |
| Weekly Payroll Jobs and Wages  | JobKeeper-supported jobs and earnings are included in jobs and earnings series.   | n/a   | Analysis of revisions to jobs and wages series related to JobKeeper back payments was included in the 16 June 2020 release.  |
| Labour Account   | JobKeeper-supported jobs and earnings are included in jobs, employment and earnings series.<br><br>JobKeeper-supported earnings are included in earnings series.  | n/a   |  |
| Average Weekly Earnings  | Jobs that are entirely supported by JobKeeper (i.e. 100% of the amount) will be included in the total earnings series, but will be excluded from the full-time series (and categorised as 'other', given the reduced hours and earnings for many of these jobs).<br><br>Headline WPI will remove any affect of JobKeeper supported payments in wage and salaries. | Additional instructions around includes and excludes were added to the questionnaire.     | The release of May 2020 data included analysis of the influence of COVID-19 and JobKeeper on Average Weekly Earnings.  |
| Wage Price Index   | Additional analytical series will be published to both include the JobKeeper payment (hourly income growth) and exclude the payment (cost of labour to an employer)   | Question wording unchanged but modified includes on the questionnaire to aid in reporting | From June quarter 2020 to March quarter 2021, two additional analytical series were published:<br>- The Labour Price Index excluded JobKeeper from the cost of labour and accounting for payroll tax reductions.<br>- The Hourly Income index included JobKeeper payments where wages increased. |

## Australian conceptual framework for measures of employee remuneration



- a. The concept 'employee income' is broadly comparable with compensation of employees.
- b. Conceptually, earnings comprise regular wages and salaries in cash and regular wages and salaries in kind.

Source: <https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6313.02006?OpenDocument> (<https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6313.02006?OpenDocument>)

## Measuring the Consumer Price Index during a time of COVID-19

### Introduction

Following the March 2020 quarter, changes were made to June quarter CPI as a result of the actions taken by governments, businesses and individuals in response to the COVID-19 pandemic (see Note on the impact of COVID-19 on the CPI). The following measurement approaches were adopted:

1. The implementation of free childcare and the changes in rental agreements reduced the prices paid by tenants, flowed through to measured CPI.

2. For unavailable goods and services, the quarterly price movements were imputed from the headline CPI quarterly movement. This applied to: urban transport fares; domestic holiday travel and accommodation; international holiday travel and accommodation; sports participation; and other recreational, sporting and cultural services. This method was used from June 2020 quarter to the September 2021 quarter.
3. From June 2020 quarter to June 2021 quarter, seasonal forward factors were used for three CPI series: child care; medical and hospital services; and pre-school and primary education, while the remaining seasonally adjusted series stayed on their (usual) concurrent seasonal adjustment approach.
4. Expenditure weights were updated in the December 2020 and 2021 quarters, as per the usual annual update practice.

Here are links to articles describing changes to the CPI in response to COVID-19:

[Annual weight update of the CPI and Living Cost Indexes \(<https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/annual-weight-update-cpi-and-living-cost-indexes/2021#introduction>\)](https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/annual-weight-update-cpi-and-living-cost-indexes/2021#introduction)

[Update to measuring the CPI in the September 2021 quarter, October 2021 \(<https://www.abs.gov.au/articles/update-measuring-cpi-september-2021-quarter>\)](https://www.abs.gov.au/articles/update-measuring-cpi-september-2021-quarter)

[Update to measuring the CPI in the December 2020 quarter, January 2021 \(<https://www.abs.gov.au/articles/update-measuring-cpi-december-2020-quarter>\)](https://www.abs.gov.au/articles/update-measuring-cpi-december-2020-quarter)

[The 2020 annual re-weight of the Australian Consumer Price Index, December 2020 \(<https://www.abs.gov.au/statistics/research/2020-annual-re-weight-australian-consumer-price-index>\)](https://www.abs.gov.au/statistics/research/2020-annual-re-weight-australian-consumer-price-index)

[Measuring the Consumer Price Index: September 2020 quarter update, October 2020 \(<https://www.abs.gov.au/articles/methods-changes-during-covid-19-period#measuring-the-consumer-price-index-september-quarter-update>\)](https://www.abs.gov.au/articles/methods-changes-during-covid-19-period#measuring-the-consumer-price-index-september-quarter-update)

[Measuring the Consumer Price Index during a time of COVID-19, July 2020 \(<https://www.abs.gov.au/articles/methods-changes-during-covid-19-period#measuring-the-consumer-price-index-during-a-time-of-covid-19>\)](https://www.abs.gov.au/articles/methods-changes-during-covid-19-period#measuring-the-consumer-price-index-during-a-time-of-covid-19)

[Note on the impact of COVID-19 on the Consumer Price Index, March quarter 2020 \(<https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/consumer-price-index-australia/mar-2020#note-on-the-impact-of-covid-19-on-the-consumer-price-index>\)](https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/consumer-price-index-australia/mar-2020#note-on-the-impact-of-covid-19-on-the-consumer-price-index)

For further information, please email [prices.statistics@abs.gov.au](mailto:prices.statistics@abs.gov.au)  
[\(mailto:prices.statistics@abs.gov.au\)](mailto:prices.statistics@abs.gov.au)

## Price collection

The ABS has a range of data sources for the CPI including: direct collection, administrative data, web scraping and transactions 'scanner' data. Direct collection, which contributes slightly more than half the weight of the CPI, is largely collected via on line or over the phone. Less than two per cent of the weight of the CPI is collected by ABS officers in-store.

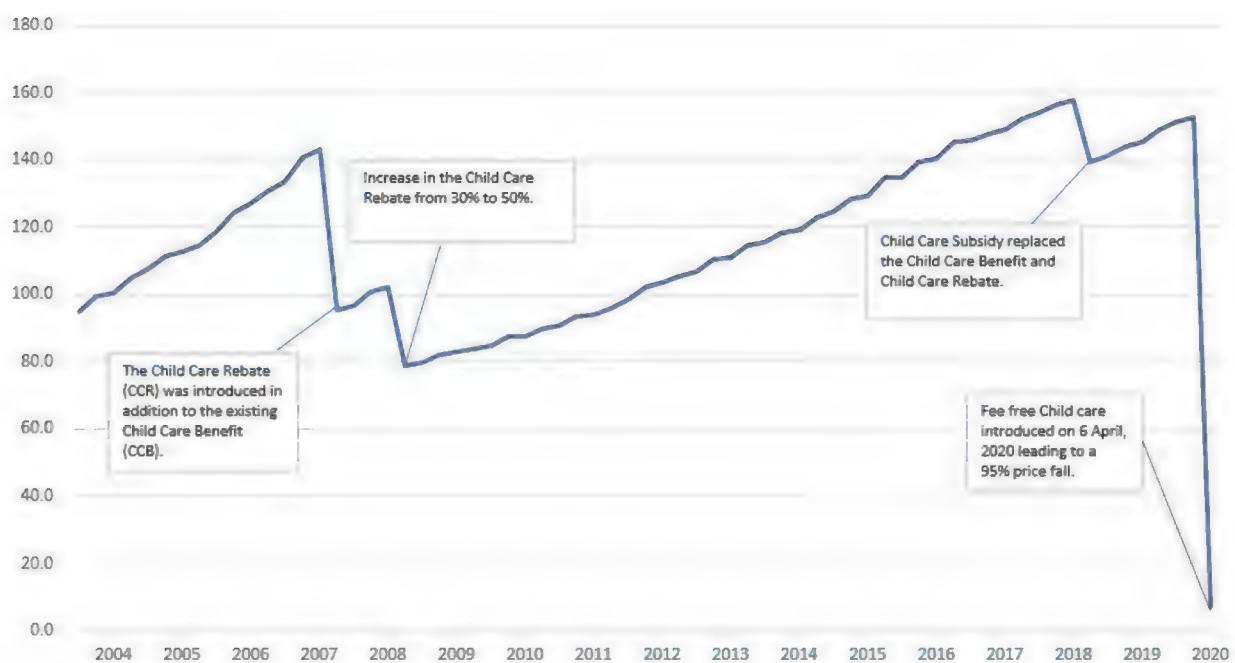
The small amount of in-store collection has continued as an office-based collection. It was determined that this change has not affected data quality and has reduced collection costs.

## Impact of free child care

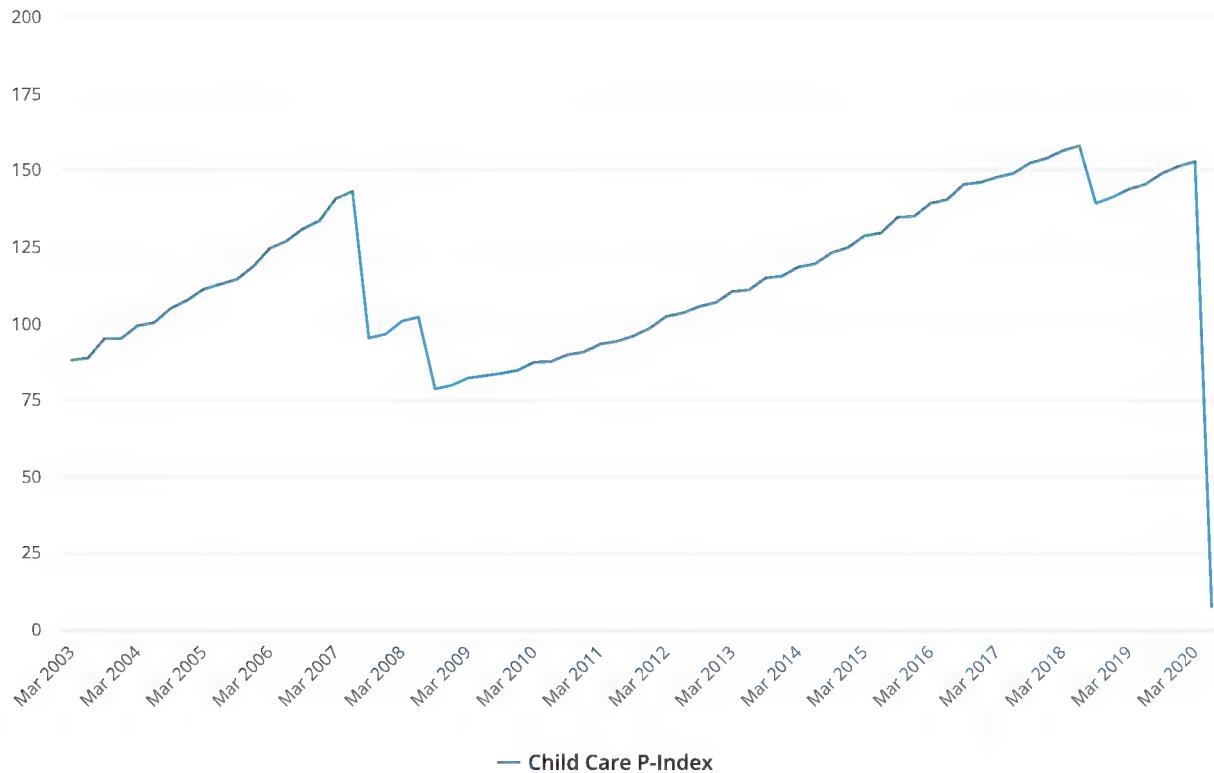
On 2 April, the Australian Government announced that child care services would be free for families from 6 April to 28 June. Following the 2 April announcement, free child care was extended until 12 July.

Child care contributes 1.2 per cent of household expenditure in the CPI and is measured through changes in the out-of-pocket expenses for families. Figure 1 summarises changes to various child care support schemes over the years, and the impact these had on the child care price series.

**Figure 1 - Child care index in the CPI (2011-12 = 100.0)**



**Graph and data: Child care index in the CPI**



The latest changes reduced child care out-of-pocket expenses for households to zero for most of the June quarter. Free child care will be taken into account by using the number of days it was in effect (62 out of 65 business days). This results in a 95 per cent price fall in the CPI child care expenditure class for the June quarter, subtracting approximately 1.1 percentage points from the headline CPI.

The scheduled ending of free child care on 12 July will result in a significant rise in the September 2020 quarter childcare price series.

Free child care will also impact these series in the June 2020 quarter:

- Preschool and primary education, with before and after school care services also being free.
- [Selected Living Cost Indexes \(<https://www.abs.gov.au/ausstats/abs@.nsf/mf/6467.0>\)](https://www.abs.gov.au/ausstats/abs@.nsf/mf/6467.0), which measure changes in living costs for different household types. Free child care will

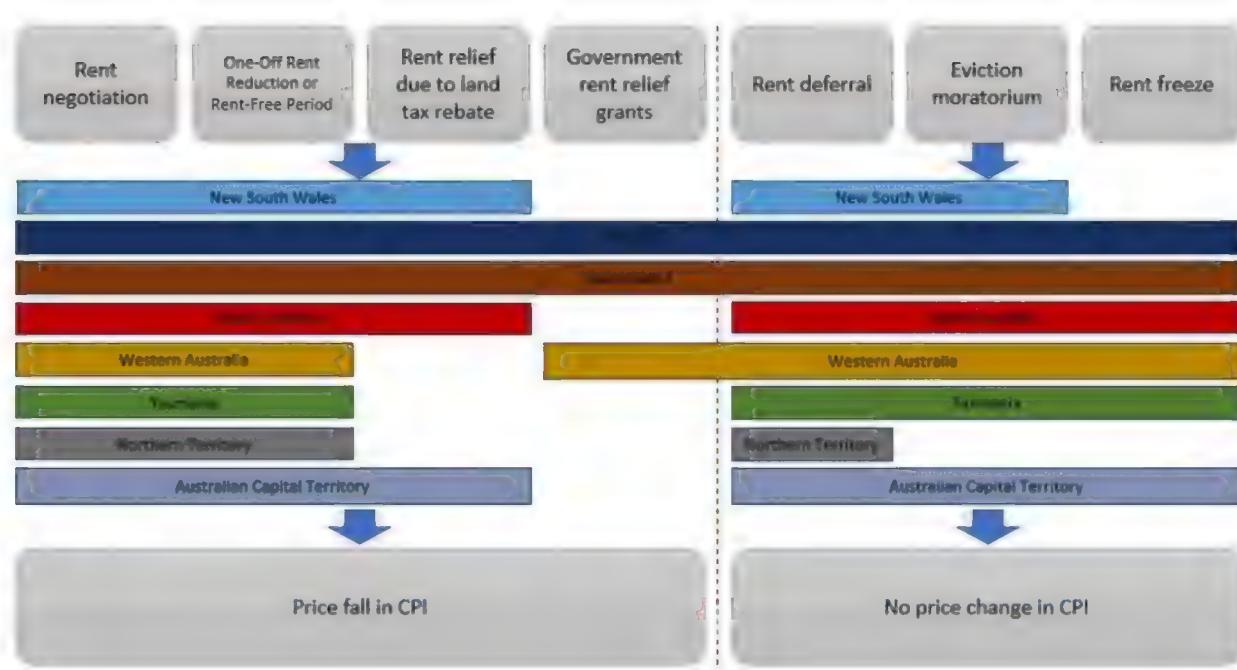
have a higher impact on employee households, for which the child care series has a weight of 1.5 per cent, compared to a weight of 1.2 per cent in the CPI.

## Measuring price change in rents

COVID-19 resulted in significant changes in the rental property market with State and Territory Governments announcing a range of rental support packages.

Rents contribute 6.8 per cent of household expenditure in the CPI, with privately owned dwelling rents contributing 92 per cent of total rents expenditure. Figure 2 provides a summary of the different scenarios by jurisdiction, and how they will be captured in the CPI.

**Figure 2 - June quarter scenarios in the CPI rent series.**



Permanent or temporary re-negotiations of rent between landlords and tenants will be treated as a price fall in the CPI. Rent reductions due to support packages, such as land tax or rental relief grants, will also result in a price fall in the CPI. This is consistent with the principle that prices collected in the CPI should reflect the out-of-pocket expenditure by the consumer, including any adjustments for Government subsidies or assistance.

The CPI measures price change in the period when the good or service is actually received, regardless of the period in which payment or use occurs. This is known as the 'Acquisitions approach'. Therefore, any deferrals in rental payments will not impact the CPI as rents will be measured as the price including the deferred amount. Eviction moratoriums and rent freezes will also have no impact on prices.

## Use of imputation for missing prices

It is common for there to be some missing prices from the CPI each quarter due to goods or services being temporarily unavailable, or businesses being temporarily closed. Missing prices typically represent around 5-6 per cent of the CPI sample each quarter.

For the June 2020 quarter, the proportion of missing prices was 13 per cent, reflecting unavailable goods and services due to COVID-19 restrictions. However, when allowance is made for the goods and services that were unavailable, such as airfares, the proportion of missing prices was closer to 7 per cent. This is only slightly higher than the June 2019 quarter proportion of 5.5 per cent.

The increase in the proportion of missing prices will not have an adverse impact on the quality of the CPI due to the use of imputation methods. Appendix 1 contains a review of the responses from other National Statistical Organisation on this topic.

When discussing imputation in the CPI, a distinction needs to be made between:

1. Available goods and services to purchase, but with some prices temporarily missing.
2. Unavailable goods and services, meaning there are no prices to collect for the entire quarter.

#### Available goods and services

The ABS has well established imputation methods for this scenario, which are supported internationally in the Consumer Price Index Manual: Theory and Practice and used widely by other National Statistical Organisations.

In most cases of temporarily missing prices, a movement is imputed off similar goods or services. This is known as class (or sample) mean imputation. This uses the assumption that the movement of the missing price is the average price change of similar goods and services. The class mean approach is commonly applied to items within the clothing, furniture and household appliance expenditure groups.

In some cases, the carry forward imputation approach is used, with available prices from the previous period and a movement of zero recorded. The carry forward approach is used where prices do not change very frequently, such as for renting a dwelling.

#### Unavailable goods and services (footnote 1)

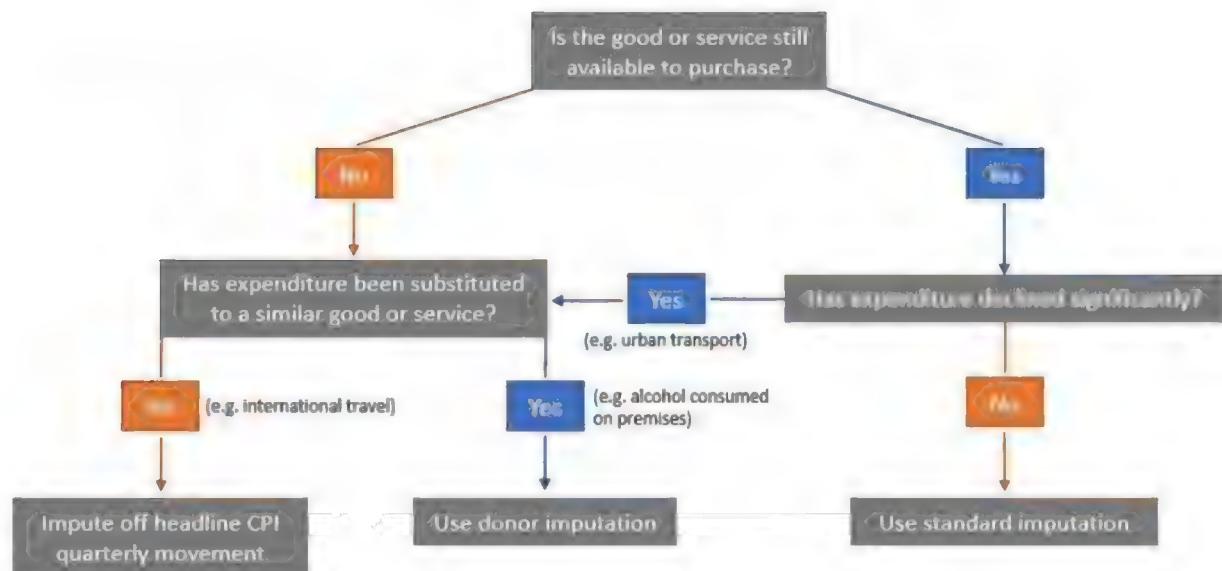
International guidelines and methods are less well established for imputation where no prices are available or no consumption has taken place (even when prices are available). Examples of this during the June 2020 quarter include domestic and international travel, and attending sporting events.

The ABS developed a CPI imputation framework to decide the imputation method to be used for different scenarios (Figure 3).

The first decision is to determine whether the good or service is available or unavailable to purchase, regardless of whether prices can be collected. The next decisions to follow are:

- in the case of an available good or service where expenditure has declined significantly, it will be treated as unavailable. Urban transport fares are an example where expenditure has declined by over 80 per cent from normal levels.
- in the case of an unavailable good or service where a significant amount of its typical expenditure has been substituted to another good or service, donor imputation will be used. An example of this is consumers substituting alcohol consumed on premises to takeaway alcohol.

**Figure 3 - CPI imputation decision framework**



## Imputation approach

- Standard imputation - used as described above in the case of goods and services that are available to purchase but for which prices are temporarily missing. This may be due to the item being out of stock or the business being closed. There is a small increase in the number of temporarily missing prices in the June quarter where this approach will be used.
- Donor imputation - used for an unavailable good or service where a significant amount of its typical expenditure has been substituted to another good or service. This approach imputes off a 'donor' series located elsewhere in the CPI. For example, takeaway alcohol will be used as the donor for alcohol consumed on premises, which is classified separately within the Alcohol and tobacco group.

- Imputation off the headline CPI - used for an unavailable good or service where consumption is not being substituted elsewhere. This has the effect of the movement of the imputed series not contributing to the CPI quarterly movement. This reflects the fact that there are no prices being transacted, and no (or very little) consumption of the particular good or service has occurred during the quarter.

Table 1 provides a summary of the imputation methods that will be used for the goods and services particularly affected by COVID-19 actions in the June 2020 quarter.

**Table 1 - CPI imputation approach for the June 2020 quarter.**

| Series   | Goods and services included   | Weight (%) | Imputation approach  |
|--|---|------------|--|
| Restaurant meals                                   | Entree, main and dessert meals from restaurants, cafes and clubs                                  | 3.3        | If available, takeaway prices used or standard imputation if not available |
| Alcohol consumed on premises                       | Beer, wine and spirits from restaurants, cafes and clubs  | 1.5        | Donor imputation off takeaway alcohol                                      |
| Urban transport fares                              | Train, bus, tram, ferry   | 0.7        | Impute off headline CPI  |
| Domestic holiday travel and accommodation          | Airfares, train, bus, ferry, hotels, motels, holiday houses, caravan parks, shared accommodation. | 3.0        | Impute off headline CPI  |
| International holiday travel and accommodation     | Airfares, tours, overseas accommodation   | 3.4        | Impute off headline CPI  |
| Sports participation                               | Gym and sports club membership fees, sports lesson fees   | 0.9        | Impute off headline CPI  |
| Other recreational, sporting and cultural services | Attending sports events, cinema, theatre, lessons   | 1.1        | Impute off headline CPI  |

## Seasonal adjustment in the CPI

Of the 87 CPI expenditure class series published by the ABS, 55 are seasonally adjusted. With COVID-19 related events affecting prices for a range of goods and services purchased by households, the ABS has assessed each of the 55 seasonally adjusted series to determine the appropriate treatment.

Consistent with other economic statistics, for the calculation of seasonally adjusted movements, the ABS has decided to move to forward factors (published in [Table 14 of the CPI \(<https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/consumer-price-index-australia/mar-quarter-2020#data-download>\)](#)) for any CPI series significantly affected for a potentially prolonged period. In these cases, the use of forward factors will replace the standard [concurrent adjustment \(<https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/6401.0.55.003Main+Features42011>\)](#).

The use of forward factors retains the pre-COVID-19 seasonal factors and allows time for an assessment of the full impact. Forward factors will be used in the June 2020 quarter for these CPI series:

- Child care

- Medical and hospital services
- Preschool and primary education

All other CPI seasonally adjusted series will remain concurrently adjusted.

For the CPI imputed series discussed in this article, a consistent approach will be used for the All groups CPI seasonally adjusted series. This means that for those series shown in table 1 above as being imputed off headline CPI in original terms, these series will be re-imputed off the aggregate seasonally adjusted level.

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## Footnotes

1. The ABS conducted extensive consultation on this topic with a number of National Statistical Organisations and Professor Kevin Fox, UNSW, and would like to thank them for their contributions.

## Appendix 1 - review of literature and response by other National Statistical Organisations

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[Show all](#)

| Country/<br>author          | Agency             | Imputation approach  | Reference   |
|-----------------------------|--------------------|--|---|
| Europe                      | Eurostat           | Headline CPI for non-seasonal products, and typical seasonal movement for seasonal products. | <a href="https://ec.europa.eu/eurostat/documents/10186/10693286/HICP_guidance.pdf">Guidance on the compilation of the CPI in the context of COVID-19 crisis</a><br><a href="https://www.stats.govt.nz/methods/impacts-of-covid-19-lockdown-on-methodology-for-food-price-index-april-2020?">Impacts of the COVID-19 lockdown on methodology for food price index April 2020</a> |
| New Zealand                 | Stats NZ           | Headline CPI   |   |
| Canada                      | Statistics Canada  | Headline CPI   | <a href="https://www150.statcan.gc.ca/n1/pub/62f0014m/62f0014m2020006-eng.htm">Technical Supplement for the April 2020 CPI</a><br><a href="https://www.bls.gov/covid19/effects-of-covid-19-pandemic-on-consumer-price-index.htm">Effects of COVID-19 Pandemic and Response on CPI</a>   |
| US                          | BLS                | Standard imputation  |   |
| Belgium                     | Statistics Belgium | Carry forward for non-seasonal products and typical seasonal movement for seasonal products  | <a href="https://statbel.fgov.be/en/news/impact-covid-19-index-calculation-and-measurement-inflation">Impact of the COVID-19 on the measurement of inflation</a><br><a href="https://www.google.com/search?q=How+to+compute+a+CPI+in+the+context+of+the+Covid-19+crisis+insee&amp;ie=&amp;oe=;">How to compute a CPI in the context of the Covid-19 crisis</a>                  |
| France                      | INSEE              | Same as Eurostat   |   |
| Italy                       | IStat              | Headline CPI   | <a href="https://www.istat.it/en/archivio/243070">The Covid-19 crisis and the compilation of CPIs</a><br><a href="https://statswiki.unece.org/display/CCD2/Compilation+of+CPI+in+times+of+COVID-19?preview=/278037166/279773654/">Impact of imputation methods on the CPI</a>   |
| Netherlands                 | CBS                | Same as Eurostat   |   |
| Norway                      | Statistics Norway  | Same as Eurostat   | <a href="https://www.ssb.no/en/priser-og-prisindeks/artikler-og-publikasjoner/corona-consequences-for-cpi">Corona consequences for CPI</a><br><a href="https://www.ons.gov.uk/economy/inflationandpriceindices/articles/coronavirusandtheeffectsonukprices/2020-05-06">Coronavirus and the effects on UK prices</a>   |
| United Kingdom              | ONS                | Headline CPI   |   |
| Erwin Diewert and Kevin Fox | NBER working paper | Headline CPI   | <a href="https://www.nber.org/papers/w27144">Measuring Real Consumption and CPI Bias Under Lockdown Conditions</a>  |

## Measuring the Wage Price Index during the COVID-19 pandemic

### Summary

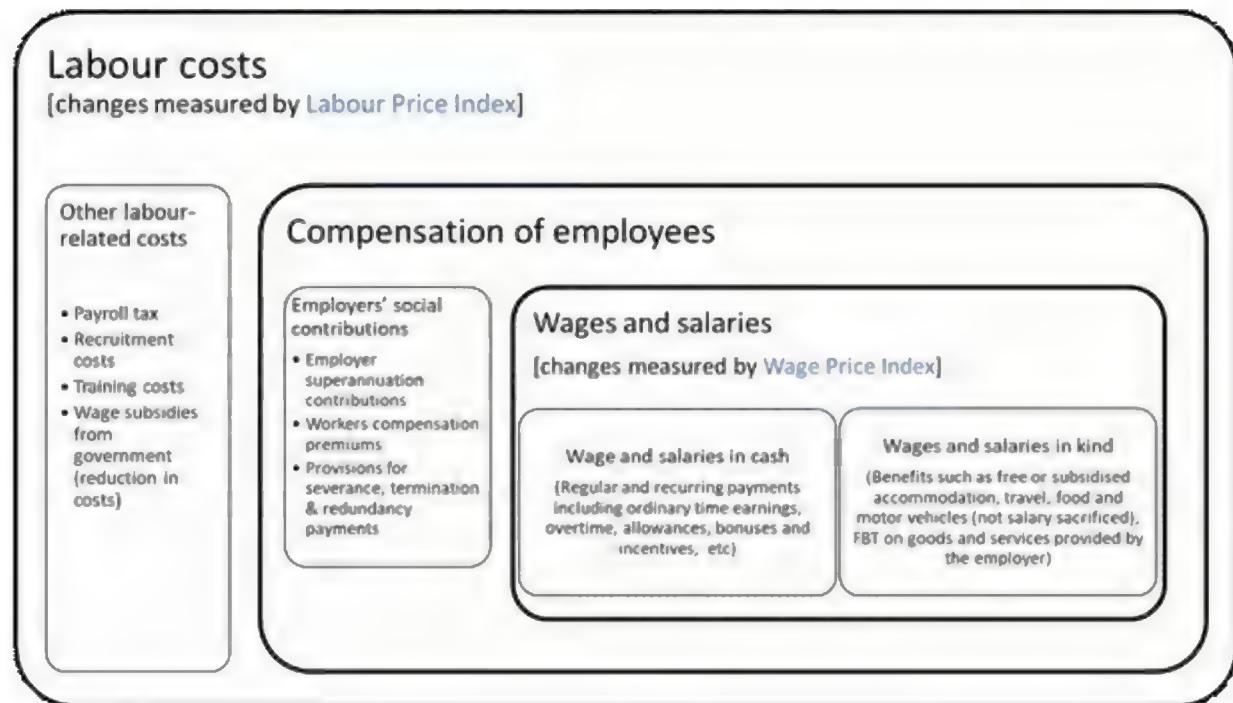
Wage subsidies (JobKeeper) and payroll tax changes have no direct impact on the WPI as they fall outside of the conceptual framework for defining wages and salaries. Following the response of Commonwealth and state/territory governments to the COVID-19 pandemic, new analytical indexes were released from June quarter 2020 to March quarter 2021 alongside the WPI providing insights around the combined impacts of government measures on the Australian labour market.

### Australian conceptual framework for measures of employee remuneration

The principle purpose of the WPI is to measure changes in the price of wages and salaries (in hourly terms) for employers in the Australian labour market.

Figure 1 shows the conceptual framework for Labour Costs. Here you can see that wage subsidies and payroll tax are outside the conceptual boundary for WPI.

### Figure 1 - Labour costs conceptual framework



### New analytical index

To assist businesses responding to the WPI survey, respondents were asked to include JobKeeper payments in their wage and salary data. This was consistent with the survey of Average Weekly Earnings (AWE) approach. JobKeeper payments were then identified in the WPI data and their effect removed during validation.

The WPI is often used as a proxy measure of price changes of the total labour cost for employers, as well a measure of an employees' hourly income growth. From June quarter 2020 to March quarter 2021, the ABS published an alternative analytical index alongside the WPI:

A Labour Price Index (LPI), including the JobKeeper wage subsidy and payroll tax changes.

The additional analytical index was created using collected WPI data, including JobKeeper payment information, supplemented with administrative data and other ABS labour survey data.

Where possible, the analytical LPI was created using the same methods as the previously published [Labour Price Index \(<https://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/D0612F79F635E926CA2579AB000E9A0C?opendocument>\)](https://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/D0612F79F635E926CA2579AB000E9A0C?opendocument), which

was last released in 2011.

## Coherence with Average Weekly Earnings

As a measure of average income, the Average Weekly Earnings survey (AWE) included JobKeeper payments. The WPI removed the effect of the JobKeeper payments from the headline WPI.

## Ensuring consistency across the ABS economic accounts

Governments across Australia have announced a series of economic stimulus and support packages in response to the COVID-19 pandemic. To ensure consistency in ABS surveys, the ABS is reviewing and where necessary updating survey questions and guidance to ensure consistent business and household reporting with the ABS classification of the announced packages (see [5261.0 - Economic measurement during COVID-19: Selected issues in the Economic Accounts, May 2020 \(<https://www.abs.gov.au/ausstats/abs@.nsf/mf/5261.0>\)](https://www.abs.gov.au/ausstats/abs@.nsf/mf/5261.0) for more information on selected packages).

Once the ABS has made a classification decision, potentially impacted survey questions are identified and reviewed across the suite of ABS surveys. If needed, new questions will be developed or modifications made to existing questions and/or guidance. Below is an example for the classification of boosting cash flow for employers ([Classifying boosting cash flow for employers in Australia's economic accounts \(<https://www.abs.gov.au/statistics/economy/business-indicators/economic-measurement-during-covid-19-selected-issues-economic-accounts/may-2020#classifying-boosting-cash-flow-for-employers-in-australias-economic-accounts>\)](https://www.abs.gov.au/statistics/economy/business-indicators/economic-measurement-during-covid-19-selected-issues-economic-accounts/may-2020#classifying-boosting-cash-flow-for-employers-in-australias-economic-accounts)).

| Areas impacted        | ABS surveys and statistical collections impacted | Survey changes   |
|-----------------------|--|--|
| Australian Government | Government Finance Statistics collection         | Government providers informed to include 'Boosting cash flow for employers' payments as a subsidy<br>'Boosting cash flow for employers' is specifically collected as a response in the 'Funding from federal, state and/or local government' question Guidance material is provided for survey respondents |
|                       | Australian Industry Survey                       |  |
| Eligible businesses   | Business Indicators Survey                       | 'Boosting cash flow for employers' is reported in the 'Other income' question which includes 'Funding from federal, state and/or local government' Processes have been modified to ensure respondents were directed to include the value of Boosting Cash Flow entitlement in other income.                |
|                       |  |  |

## Measuring residential property prices during COVID-19

The Residential property price indexes (RPPIs) measure price change of the stock of

residential dwellings over time. Residential property sales data are used to produce the RPPIs and related statistics. For each capital city, RPPIs are produced by stratifying dwelling transactions by: dwelling type; long term median price; and socio-economic index for areas.

The effects of COVID-19 saw residential property transactions fall substantially in some capital cities during the June and September 2020 quarters. This reduced the number of transactions in most strata. Stratification methods require a sufficient number of transactions to compile the indexes each quarter. To overcome this, the ABS introduced imputation methods as per the CPI approach.

For the June 2020 quarter, imputation was used for Hobart and Darwin. The movement in each city's house price index was used to impute the movement in its attached dwellings price index.

For the September 2020 quarter, imputation was used for Darwin. The quarterly movement in the house price index and the attached dwellings price index for the eight capital cities were used to impute the movement in Darwin's house price index and attached dwellings price index.

Further information is available in Residential Property Price Indexes, Eight Capital Cities: June quarter 2020, released on Tuesday 15 September 2020.

## Measuring the Consumer Price Index: September quarter update

### Introduction

The impact of COVID-19 continues to be reflected in the statistics produced by the ABS, including many economic statistics. In response to the pandemic, decisions and actions taken by governments, businesses and households resulted in a [record quarterly fall of 1.9 per cent in the Consumer Price Index \(CPI\) \(<https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/consumer-price-index-australia/latest-release>\)](https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/consumer-price-index-australia/latest-release) in the June 2020 quarter.

For the release of the June quarter CPI, the ABS had to address several new measurement challenges, in particular: the suspension of the CPI in-store collection; free child care; and the unavailability of certain goods and services, for example, international holiday travel. These topics were discussed in [Measuring the CPI during a time of COVID-19 \(<https://www.abs.gov.au/articles/methods-changes-during-covid-19-period>\)](https://www.abs.gov.au/articles/methods-changes-during-covid-19-period).

This article provides an update to the ongoing CPI measurement challenges for the

September 2020 quarter, released on 28 October.

The September quarter CPI contains additional analysis provided in two spotlight articles: [CPI exclusion-based measures](https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/consumer-price-index-australia/latest-release#spotlight-cpi-exclusion-based-measures) (<https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/consumer-price-index-australia/latest-release#spotlight-cpi-exclusion-based-measures>) and [Underlying inflation measures](https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/consumer-price-index-australia/latest-release#spotlight-underlying-inflation-measures) (<https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/consumer-price-index-australia/latest-release#spotlight-underlying-inflation-measures>). The aim of these articles is to assist users in understanding the COVID-19 related impacts on the CPI, including temporary impacts such as free child care and the subsequent re-application of fees.

For further information, please email [prices.statistics@abs.gov.au](mailto:prices.statistics@abs.gov.au) (<mailto:prices.statistics@abs.gov.au>).

## Data collection

The suspension of CPI in-store collection remained in place for the September 2020 quarter. As in the June quarter, the small amount of collection previously undertaken in-store continued to be conducted by ABS office-based staff either online or over the phone.

Missing prices, due to goods or services being temporarily unavailable or businesses being temporarily closed, typically represent around 5-6 per cent of the CPI sample each quarter. In the June quarter this was slightly higher, at around 7 per cent. With many businesses remaining closed during the September quarter, the proportion of missing prices was again higher than usual at around 7 per cent of the CPI sample, while in Melbourne it was around 10 per cent. As discussed in the June quarter article, standard imputation methods were used in these cases of missing prices.

Stage 4 restrictions in Melbourne meant prices were unable to be collected from some retailers, in particular for hairdressing services and motor vehicles. In these cases a price movement was imputed from Melbourne's CPI quarterly movement - see Unavailable goods and services below for further details.

## Child care

On 6 April the Australian Government introduced the 'Early Childhood Education and Care Relief Package'. Free child care was provided for families from 6 April to 12 July, resulting in a 95 per cent fall in the child care series in the June 2020 quarter. With the removal of free child care on 13 July, families were again required to pay fees similar to pre-6 April.

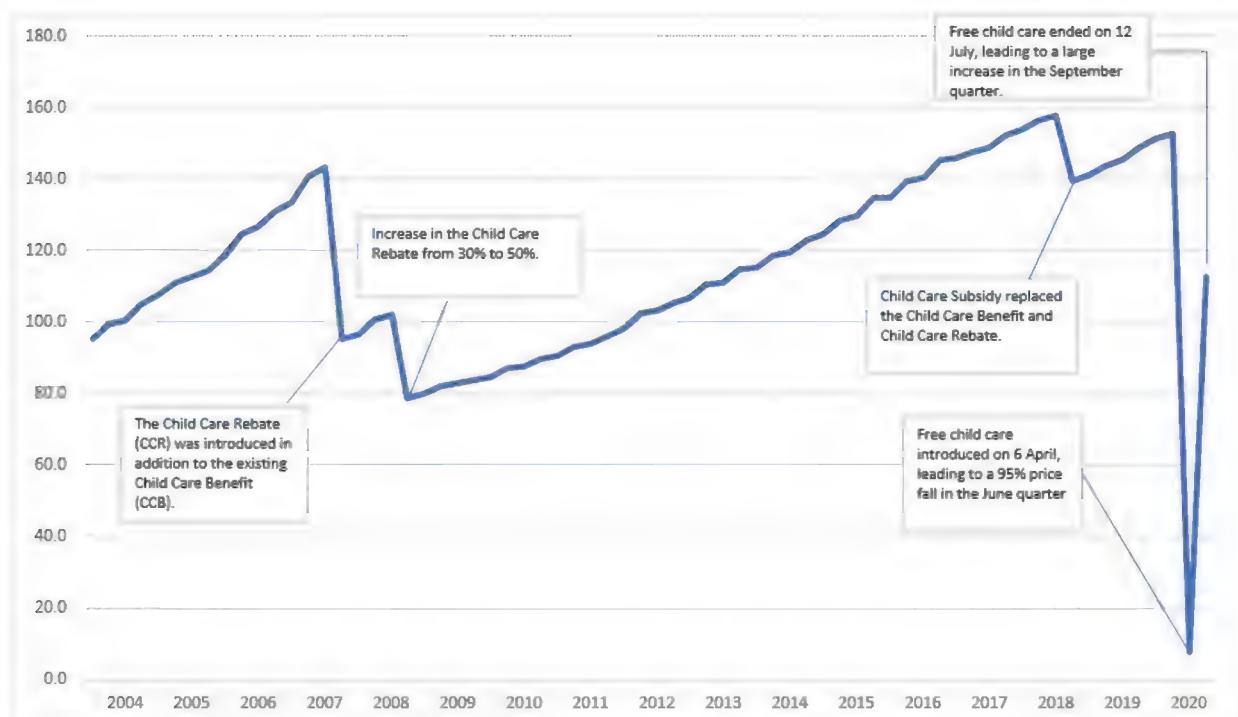
Applying a similar treatment as the June quarter, the number of business days where child care was not free was used to derive a movement for the child care series. In the September quarter, families paid child care fees for 58 out of 66 business days. With the Australian

Government's announcement of further support for child care centres in Victoria, Melbourne's movement for the child care series differs from the other seven capital cities. Nationally, Melbourne contributes 24 per cent to the child care series.

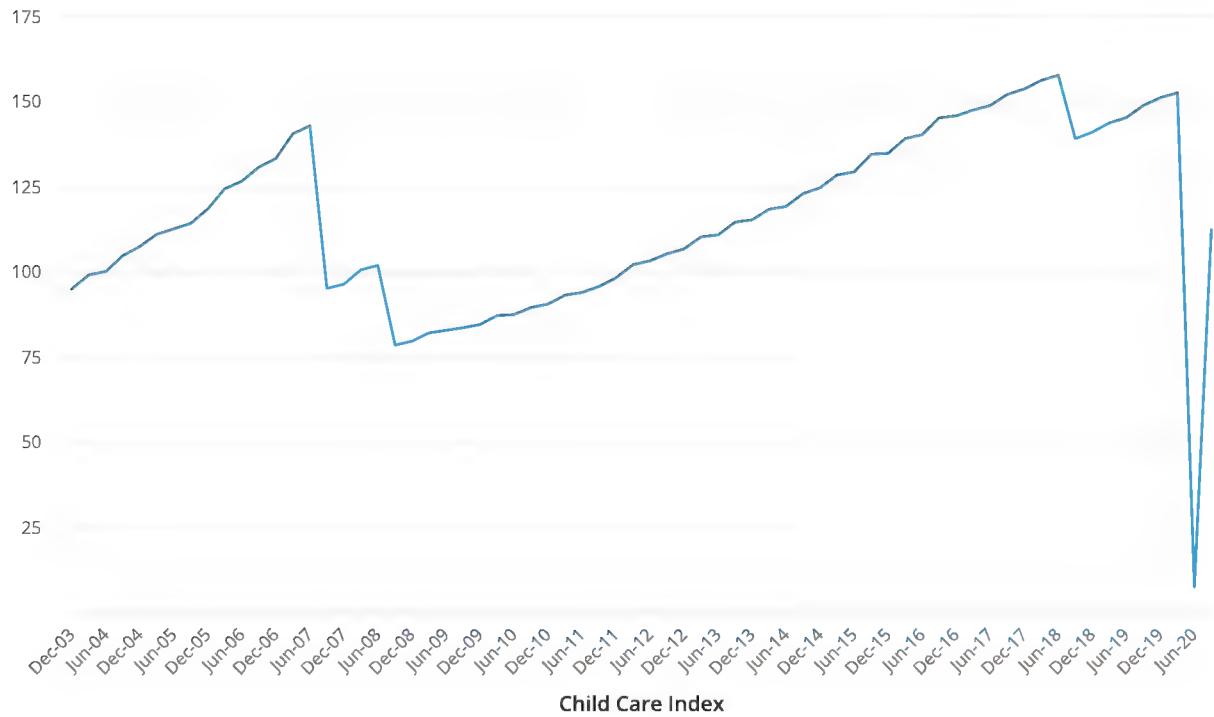
The September 2020 quarter index for the CPI child care series increased from 7.6 to around 112.6. The rise in child care added approximately 0.9 percentage points to the headline CPI movement in the September quarter.

Figure 1 shows that the child care series was still 26 per cent below the pre-COVID-19 March quarter index level of 152.8. This was due to Stage 4 restrictions in Melbourne impacting child care attendance and free child care being in place across Australia for eight days in July.

**Figure 1 - Child care index in the CPI (2011-12 = 100.0)**



## Graph and data: Child care index in the CPI



As with the June quarter, the ending of free child care will impact the following series in the September quarter:

Preschool and primary education in the CPI, with before and after school care services no longer being free.

[Selected Living Cost Indexes](https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/selected-living-cost-indexes-australia/latest-release) (<https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/selected-living-cost-indexes-australia/latest-release>), which measure changes in living costs for different household types.

## Unavailable goods and services

During the first wave of the COVID-19 pandemic, States and Territories introduced social distancing requirements and travel restrictions. This saw a number of services being completely unavailable or significantly restricted for the majority of the June quarter. In response to this, the ABS developed an imputation framework which included the treatment for unavailable or significantly restricted services (see Figure 2 in the appendix).

In the June quarter scenario, a movement was imputed off the headline CPI quarterly movement. This reflected the fact that there were no prices available and that no (or very little) consumption of the particular service during the quarter. This approach was used for five series in the June quarter: urban transport fares; domestic holiday travel and accommodation; international holiday travel and accommodation; sports participation; and other recreational, sporting and cultural services. These five series contribute around 9 per cent of the weight of the CPI.

With a number of the social distancing requirements and restrictions easing in recent months, it is again possible to measure price change for some of these CPI series in the September quarter. Exceptions to this are:

- Domestic holiday travel and accommodation - State and Territory border closures were in place for all or part of the quarter, restricting interstate holiday travel.
- International holiday travel and accommodation - international travel restrictions remained in place.
- Melbourne - many retailers were closed due to Stage 3 and 4 restrictions that were in place in Melbourne for the majority of the September quarter.

Table 1 lists the changes between the June and September quarters. For Melbourne, seven series will be imputed from the Melbourne All groups CPI movement for the September quarter. Melbourne contributes around 30 per cent to the national figure for each of these CPI series.

**Table 1 - CPI imputation approach for the September 2020 quarter**

| CPI series   | CPI<br>Weight<br>(%) | June quarter<br>imputation approach  | September quarter imputation<br>approach |  |
|--|----------------------|--|--|--|
|  |                      | Seven<br>capital<br>cities   | Melbourne                                |  |
| Restaurant meals                                   | 3.3                  | If available, takeaway prices used or standard imputation if not available | Measure normally using collected prices  | If available, takeaway prices used or standard imputation if not available |
| Alcohol consumed on premises                       | 1.5                  | Donor imputation off takeaway alcohol                                      | Measure normally using collected prices  | Donor imputation off takeaway alcohol                                      |
| Urban transport fares                              | 0.7                  | Imputed off each city's All groups CPI                                     | Measure normally using collected prices  | Impute off Melbourne's All groups CPI                                      |
| Domestic holiday travel and accommodation          | 3                    | Imputed off each city's All groups CPI                                     | Impute off each city's All groups CPI    | Impute off Melbourne's All groups CPI                                      |
| International holiday travel and accommodation     | 3.4                  | Imputed off each city's All groups CPI                                     | Impute off each city's All groups CPI    | Impute off Melbourne's All groups CPI                                      |
| Sports participation                               | 0.9                  | Imputed off each city's All groups CPI                                     | Measure normally using collected prices  | Impute off Melbourne's All groups CPI                                      |
| Other recreational, sporting and cultural services | 1.1                  | Imputed off each city's All groups CPI                                     | Measure normally using collected prices  | Impute off Melbourne's All groups CPI                                      |
| Hairdressing and personal grooming services        | 0.9                  | Measured normally using collected prices                                   | Measure normally using collected prices  | Impute off Melbourne's All groups CPI                                      |
| Motor vehicles                                     | 2.5                  | Measured normally using collected prices                                   | Measure normally using collected prices  | Impute off Melbourne's All groups CPI                                      |

## Re-weighting the CPI

Each December quarter the ABS updates the CPI expenditure weights. This provides an annual update to the CPI spending patterns of Australian households, which is important for an accurate measure of inflation.

With COVID-19 seeing social distancing and restrictions in place, there has been a significant shift in the pattern of goods and services purchased by Australian households. Consistent with the June quarter, the CPI weights will not be updated in the September quarter in response to temporary changes in spending patterns.

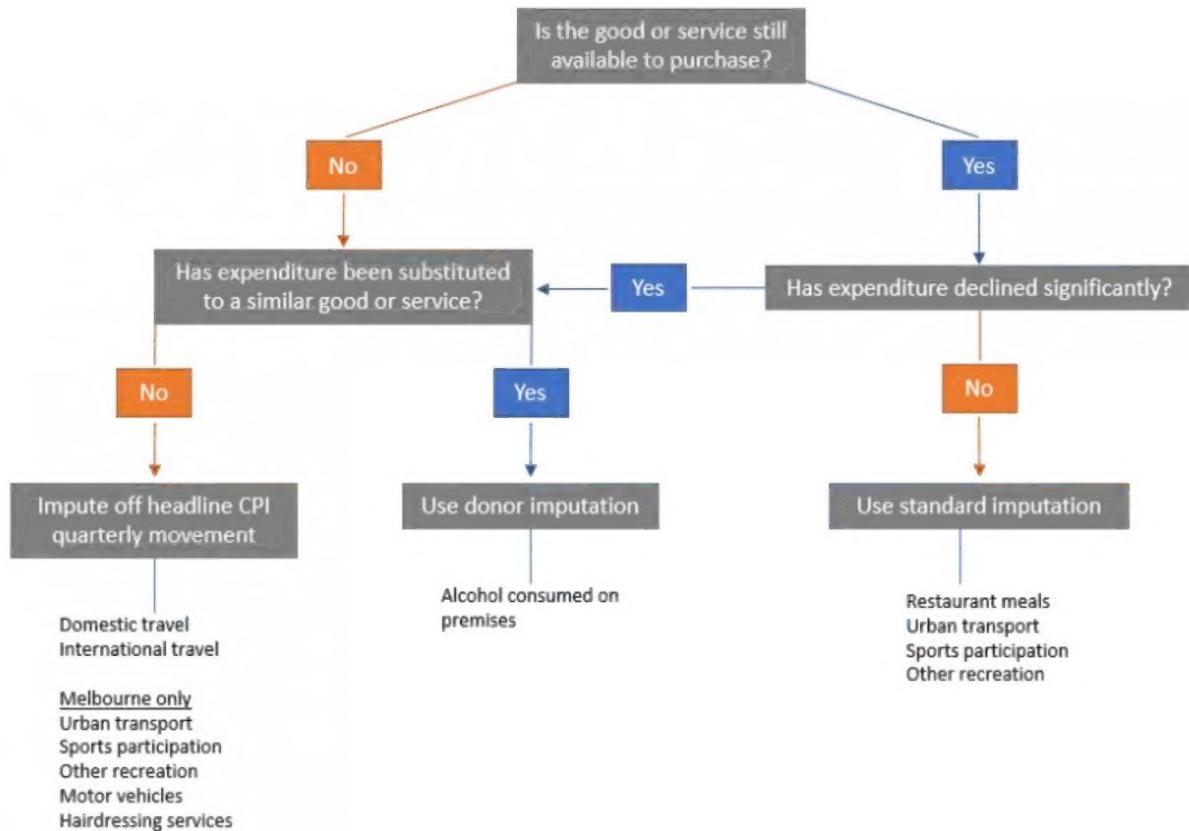
The CPI will be re-weighted again in the December 2020 quarter. This will capture the longer-lasting changes in expenditure, such as for international holiday travel. Work is currently underway to make use of a wide range of timely data sources to supplement the use of National Accounts data to update the CPI expenditure weights.

An information paper on the CPI weight update will be published in December 2020, ahead of the December quarter CPI release on 27 January 2021.

For more information on re-weighting the CPI see [Introduction of the Consumer Price Index Weight Update, 2019 \(<https://www.abs.gov.au/research/economy/price-indexes-and-inflation/introduction-consumer-price-index-weight-update-2019>\)](https://www.abs.gov.au/research/economy/price-indexes-and-inflation/introduction-consumer-price-index-weight-update-2019).

## Appendix

**Figure 2 - imputation framework September quarter application**



## Measuring the labour market during COVID-19

The ABS produces a broad range of labour market information about people, jobs and businesses over time. This covers topics such as employment, unemployment, participation, job vacancies, wages, hours, working arrangements and industrial relations.

During the pandemic, the ABS added new data series, including weekly payroll jobs and wages statistics (based on Single Touch Payroll data from the ATO) and additional measures of job vacancies. The ABS has also released additional educational and supporting material to explain ABS concepts, sources and methods and how to understand changes in the labour market during the COVID period, such as [insights into job attachment \(<https://www.abs.gov.au/articles/insights-job-attachment-during-pandemic-november-2021>\)](https://www.abs.gov.au/articles/insights-job-attachment-during-pandemic-november-2021).

Since 2020, the ABS has also actively managed the impacts on response rates for its labour market surveys. For the Labour Force Survey, this included approaching additional households in some months, particularly around lockdowns, to ensure that a similar number of households responded to the survey. Additional non-response adjustments were also used, to address slightly elevated levels of bias in some months.

For business surveys, additional follow-up measures were undertaken, complemented by

changes to imputation methods, to ensure that there was a comparable sample to pre-pandemic cycles. The ABS also deferred the two-yearly Survey of Employee Earnings and Hours from May 2020 to May 2021, to avoid the period of disruption during the first wave of the pandemic and to reduce the reporting burden on businesses at that time.

## Measuring population estimates during COVID-19

The ABS' official population estimates have played a key role in informing responses during COVID-19, including for vaccination rates. The impact of COVID-19 has resulted in the need for some methodological change to maintain data series.

To ensure the ongoing production of fit-for-purpose official population estimates through the COVID-19 pandemic, the ABS continues to assess the likely impact of changed traveller behaviour on preliminary overseas migration estimates, a component of ERP. The ABS has introduced more frequent revisions to overseas migration to ensure the suite of demographic statistics continue to be of high quality and reflect the most timely data available. Preliminary overseas migration estimates will be revised every quarter over four quarters, instead of once after four quarters, until it becomes final. These more frequent revisions will ensure the most timely and accurate data flows through to ERP.

In the latter half of 2021, Medicare change of address data, the main data sources for internal migration, showed an implausibly high number of quarterly moves due to widespread updating of Medicare records as people get vaccinated for COVID-19. While these updates are likely to represent an improvement in Medicare address information, not all the address changes recorded in these quarters happened within them. To treat for this, under-count adjustments in the affected quarters and those made in previous quarters have been revised.

The ABS introduced two new provisional releases to support early understanding of COVID-19 disruptions on population growth. Provisional overseas travel statistics are now available in the Overseas and Arrivals and Departures release. The release of Provisional Regional Internal Migration Estimates have been suspended due to the issues relating to Medicare address changes outlined above.

In addition to the above changes, the trend and seasonally adjusted series for Overseas arrivals and departures remain suspended in response to strict ongoing international border restrictions.

## Labour statistics during COVID-19 period

The ABS has actively managed impacts on response rates to labour market surveys through approaching additional sample, additional follow-up measures, and enhanced estimation and imputation methods.

The ABS released new statistics (e.g. weekly payroll jobs and wages), and supporting insights and educational material.

## International Trade in Goods and Services during COVID-19 period

New data sources and methods for estimating travel service imports and exports were incorporated in International Trade in Goods and Services, Australia, August 2021.

Further detail to the changes in the way travel services are compiled can be found in the article, [Australian System of National Accounts historical revisions: Enhancing trade and balance of payments statistics \(<https://www.abs.gov.au/articles/australian-system-national-accounts-historical-revisions>\)](https://www.abs.gov.au/articles/australian-system-national-accounts-historical-revisions).

## Post release changes

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### Show all

30/10/2023 - Updated 'ABS trend and seasonal adjustment during COVID-19' section for Monthly Business Turnover Indicator

22/09/2023 - Edited 'reinstatement of trend' table and modified wording in Main Features

13/07/2023 - Update to ABS trend and seasonal adjustment during COVID-19 section

04/05/2023 - Update to ABS trend and seasonal adjustment during COVID-19 section

13/10/2022 - Update to ABS trend and seasonal adjustment during COVID-19 section

18/08/2022 - Updates to ABS trend and seasonal adjustment during COVID-19 and Measuring the Wage Price Index during the COVID-19 pandemic sections

28/01/2022 - Addition of the Measuring the labour market during a time of COVID-19 article. Addition of the Measuring population estimates during COVID-19 article.

Addition of the Labour statistics during COVID-19 period article.

Addition of the International Trade in Goods and Services during COVID-19 period article.

25/01/2022 - Updated to reflect the latest information.

17/08/2021 - ABS trend and seasonal adjustment during COVID-19 table updated with series moved back to concurrent.

07/10/2020 - Addition of the Measuring the Consumer Price Index: September quarter update

07/09/2020 - Addition of the Measuring residential property prices during COVID-19 article.

23/07/2020 - Addition of the Measuring the Wage Price Index during a time of COVID-19 article.

Addition of the Coherence across the economic accounts article.

ABS trend and seasonal adjustment during COVID-19 updated with a summary of the treatment of JobKeeper.

08/07/2020 - Addition of the Measuring the Consumer Price Index during a time of COVID-19 article.

ABS trend and seasonal adjustment during COVID-19 updated to include list of ABS series that have moved to forward factors for seasonal adjustment.

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### **Previous catalogue number**

This release previously used catalogue number 1359.0.